

SU0423

## SEQUENCE LISTING

&lt;110&gt; SUNTORY LIMITED

&lt;120&gt; Arachidonic acid-containing plants and use of the plants

&lt;130&gt; SU0423

&lt;140&gt;

&lt;141&gt;

&lt;150&gt; JP 2003-419124

&lt;151&gt; 2003-12-17

&lt;150&gt; JP 2004-097089

&lt;151&gt; 2004-03-29

&lt;160&gt; 28

&lt;170&gt; PatentIn Ver. 2.1

&lt;210&gt; 1

&lt;211&gt; 457

&lt;212&gt; PRT

&lt;213&gt; Mortierella alpina

&lt;400&gt; 1

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Asn Ala Glu Ala Leu Asn Glu Gly Lys Lys Asp Ala Glu Ala Pro Phe
          20             25             30
Leu Met Ile Ile Asp Asn Lys Val Tyr Asp Val Arg Glu Phe Val Pro
      35             40             45
Asp His Pro Gly Gly Ser Val Ile Leu Thr His Val Gly Lys Asp Gly
 50             55             60
Thr Asp Val Phe Asp Thr Phe His Pro Glu Ala Ala Trp Glu Thr Leu
 65             70             75             80
Ala Asn Phe Tyr Val Gly Asp Ile Asp Glu Ser Asp Arg Ala Ile Lys
      85             90             95
Asn Asp Asp Phe Ala Ala Glu Val Arg Lys Leu Arg Thr Leu Phe Gln
      100            105            110
Ser Leu Gly Tyr Tyr Asp Ser Ser Lys Ala Tyr Tyr Ala Phe Lys Val
      115            120            125
Ser Phe Asn Leu Cys Ile Trp Gly Leu Ser Thr Phe Ile Val Ala Lys
      130            135            140
Trp Gly Gln Thr Ser Thr Leu Ala Asn Val Leu Ser Ala Ala Leu Leu
      145            150            155            160
Gly Leu Phe Trp Gln Gln Cys Gly Trp Leu Ala His Asp Phe Leu His
      165            170            175
His Gln Val Phe Gln Asp Arg Phe Trp Gly Asp Leu Phe Gly Ala Phe
      180            185            190
Leu Gly Gly Val Cys Gln Gly Phe Ser Ser Ser Trp Trp Lys Asp Lys
      195            200            205
His Asn Thr His His Ala Ala Pro Asn Val His Gly Glu Asp Pro Asp
      210            215            220
Ile Asp Thr His Pro Leu Leu Thr Trp Ser Glu His Ala Leu Glu Met
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Phe Ser Asp Val Pro Asp Glu Glu Leu Thr Arg Met Trp Ser Arg Phe
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Met Val Leu Asn Gln Thr Trp Phe Tyr Phe Pro Ile Leu Ser Phe Ala  
 260 265 270  
 Arg Leu Ser Trp Cys Leu Gln Ser Ile Met Phe Val Leu Pro Asn Gly  
 275 280 285  
 Gln Ala His Lys Pro Ser Gly Ala Arg Val Pro Ile Ser Leu Val Glu  
 290 295 300  
 Gln Leu Ser Leu Ala Met His Trp Thr Trp Tyr Leu Ala Thr Met Phe  
 305 310 315 320  
 Leu Phe Ile Lys Asp Pro Val Asn Met Ile Val Tyr Phe Leu Val Ser  
 325 330 335  
 Gln Ala Val Cys Gly Asn Leu Leu Ala Ile Val Phe Ser Leu Asn His  
 340 345 350  
 Asn Gly Met Pro Val Ile Ser Lys Glu Glu Ala Val Asp Met Asp Phe  
 355 360 365  
 Phe Thr Lys Gln Ile Ile Thr Gly Arg Asp Val His Pro Gly Leu Phe  
 370 375 380  
 Ala Asn Trp Phe Thr Gly Gly Leu Asn Tyr Gln Ile Glu His His Leu  
 385 390 395 400  
 Phe Pro Ser Met Pro Arg His Asn Phe Ser Lys Ile Gln Pro Ala Val  
 405 410 415  
 Glu Thr Leu Cys Lys Lys Tyr Gly Val Arg Tyr His Thr Thr Gly Met  
 420 425 430  
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 <212> DNA  
 <213> Mortierella alpina

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<210> 3  
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 <213> Mortierella alpina

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 Asp Pro Leu Glu Ala Ala Leu Val Ala Gln Ala Glu Lys Phe Phe Pro  
 35 40 45  
 Thr Val Val His His Thr Arg Gly Phe Leu Val Ala Val Glu Ser Pro  
 50 55 60  
 Leu Ala Arg Glu Leu Pro Leu Met Asn Pro Phe His Val Leu Leu Ile  
 65 70 75 80  
 Ala Leu Ala Tyr Leu Val Thr Val Phe Val Gly Met Gln Ile Met Lys  
 85 90 95  
 Asn Phe Glu Arg Phe Glu Val Lys Thr Phe Ser Leu Phe His Asn Phe  
 100 105 110  
 Cys Leu Val Ser Ile Ser Ala Tyr Met Cys Gly Gly Ile Leu Tyr Glu  
 115 120 125  
 Ala Tyr Gln Ala Asn Tyr Gly Leu Phe Glu Asn Ala Ala Asp His Thr  
 130 135 140  
 Val Gln Gly Leu Pro Met Ala Lys Met Ile Trp Leu Phe Tyr Phe Ser  
 145 150 155 160  
 Lys Ile Met Glu Phe Val Asp Thr Met Ile Met Val Leu Lys Lys Asn  
 165 170 175  
 Asn Arg Gln Ile Ser Phe Leu His Val Tyr His His Ser Ser Ile Phe  
 180 185 190  
 Thr Ile Trp Trp Leu Val Thr Phe Val Ala Pro Asn Gly Glu Ala Tyr  
 195 200 205  
 Phe Ser Ala Ala Leu Asn Ser Phe Ile His Val Ile Met Tyr Gly Tyr  
 210 215 220  
 Tyr Phe Leu Ser Ala Leu Gly Phe Lys Gln Val Ser Phe Ile Lys Phe  
 225 230 235 240  
 Tyr Ile Thr Arg Ser Gln Met Thr Gln Phe Cys Met Met Ser Ile Gln  
 245 250 255  
 Ser Ser Trp Asp Met Tyr Ala Met Lys Val Leu Gly Arg Pro Gly Tyr  
 260 265 270  
 Pro Phe Phe Ile Thr Ala Leu Leu Trp Phe Tyr Met Trp Thr Met Leu  
 275 280 285  
 Gly Leu Phe Tyr Asn Phe Tyr Arg Lys Asn Ala Lys Leu Ala Lys Gln  
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 Ala Lys Ile Asp Ala Ala Lys Glu Lys Ala Arg Lys Leu Gln  
 305 310 315

&lt;210&gt; 4

&lt;211&gt; 954

&lt;212&gt; DNA

&lt;213&gt; Mortierella alpina

&lt;400&gt; 4

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 gcgctogctt acttggtcac ggtctttgtg ggcattgcaga tcatgaagaa ctttgaacgg 300  
 ttcgagggtca agacgttctc gctcttccac aacttttgtc tggctcgcag cagtgcctac 360

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atgtgcccgc ggatcttgta cgaggcttac caggccaact atggactgtt tgagaacgcg 420  
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 aagatcatgg agtttgcga caccatgac atggctcta agaagaaca ccgccagatc 540  
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 tggttctaca tgtggaccat gctcggactc ttctacaact tctacagaaa gaacgccaaag 900  
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&lt;210&gt; 5

&lt;211&gt; 446

&lt;212&gt; PRT

&lt;213&gt; Mortierella alpina

&lt;400&gt; 5

Met Gly Thr Asp Gln Gly Lys Thr Phe Thr Trp Gln Glu Leu Ala Ala  
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 His Asn Thr Glu Asp Ser Leu Leu Leu Ala Ile Arg Gly Asn Val Tyr  
 20 25 30  
 Asp Val Thr Lys Phe Leu Ser Arg His Pro Gly Gly Thr Asp Thr Leu  
 35 40 45  
 Leu Leu Gly Ala Gly Arg Asp Val Thr Pro Val Phe Glu Met Tyr His  
 50 55 60  
 Glu Phe Gly Ala Ala Glu Ala Ile Met Lys Lys Tyr Tyr Val Gly Thr  
 65 70 75 80  
 Leu Val Ser Asn Glu Leu Pro Ile Phe Pro Glu Pro Thr Val Phe His  
 85 90 95  
 Lys Thr Ile Lys Gly Arg Val Glu Ala Tyr Phe Lys Asp Arg Asn Met  
 100 105 110  
 Asp Ser Lys Asn Arg Pro Glu Ile Trp Gly Arg Tyr Ala Leu Ile Phe  
 115 120 125  
 Gly Ser Leu Ile Ala Ser Tyr Tyr Ala Gln Leu Phe Val Pro Phe Val  
 130 135 140  
 Val Glu Arg Thr Trp Leu Gln Val Val Phe Ala Ile Ile Met Gly Phe  
 145 150 155 160  
 Ala Cys Ala Gln Val Gly Leu Asn Pro Leu His Asp Ala Ser His Phe  
 165 170 175  
 Ser Val Thr His Asn Pro Thr Val Trp Lys Ile Leu Gly Ala Thr His  
 180 185 190  
 Asp Phe Phe Asn Gly Ala Ser Tyr Leu Val Trp Met Tyr Gln His Met  
 195 200 205  
 Leu Gly His His Pro Tyr Thr Asn Ile Ala Gly Ala Asp Pro Asp Val  
 210 215 220  
 Ser Thr Ser Glu Pro Asp Val Arg Arg Ile Lys Pro Asn Gln Lys Trp  
 225 230 235 240  
 Phe Val Asn His Ile Asn Gln His Met Phe Val Pro Phe Leu Tyr Gly  
 245 250 255  
 Leu Leu Ala Phe Lys Val Arg Ile Gln Asp Ile Asn Ile Leu Tyr Phe  
 260 265 270  
 Val Lys Thr Asn Asp Ala Ile Arg Val Asn Pro Ile Ser Thr Trp His  
 275 280 285  
 Thr Val Met Phe Trp Gly Gly Lys Ala Phe Phe Val Trp Tyr Arg Leu  
 290 295 300

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Ile Val Pro Met Gln Tyr Leu Pro Leu Ser Lys Val Leu Leu Leu Phe  
 305 310 315 320  
 Thr Val Ala Asp Met Val Ser Ser Tyr Trp Leu Ala Leu Thr Phe Gln  
 325 330 335  
 Ala Asn His Val Val Glu Glu Val Gln Trp Pro Leu Pro Asp Glu Asn  
 340 345 350  
 Gly Ile Ile Gln Lys Asp Trp Ala Ala Met Gln Val Glu Thr Thr Gln  
 355 360 365  
 Asp Tyr Ala His Asp Ser His Leu Trp Thr Ser Ile Thr Gly Ser Leu  
 370 375 380  
 Asn Tyr Gln Ala Val His His Leu Phe Pro Asn Val Ser Gln His His  
 385 390 395 400  
 Tyr Pro Asp Ile Leu Ala Ile Ile Lys Asp Thr Cys Ser Glu Tyr Lys  
 405 410 415  
 Val Pro Tyr Leu Val Lys Asp Thr Phe Trp Gln Ala Phe Ala Ser His  
 420 425 430  
 Leu Glu His Leu Arg Val Leu Gly Leu Arg Pro Lys Glu Glu  
 435 440 445

<210> 6  
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 gagatgtacc acgagtttgg agctgcagag gctatcatga agaagtacta tgttggcaca 240  
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 <212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer  
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cagttctaga aaattcttta atacgg

26

<210> 9

<211> 26

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer Sacmasf

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26

<210> 10

<211> 33

<212> DNA

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<211> 27

<212> DNA

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<211> 32

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<213> Artificial Sequence

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<400> 16

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<210> 17

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer det6f3

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<210> 18

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer det6r2

<400> 18

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<210> 19

<211> 20

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer det5f4

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<210> 20

<211> 20

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<223> Description of Artificial Sequence: Primer det5r3

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<210> 22  
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<223> Description of Artificial Sequence: Primer SacGLr

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<210> 24  
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<223> Description of Artificial Sequence: Primer EGFP-f1

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<210> 26  
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<220>  
<223> Description of Artificial Sequence: Primer EGFP-R1

<400> 26

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21

<210> 27

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer GLEf

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20

<210> 28

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer GLEr

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20